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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/623,273	10/01/2001	Kazunori Yamanaka	58799-016	3839

7590

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EXAMINER

KIM, TAE JUN

ART UNIT

PAPER NUMBER

3746

DATE MAILED: 04/08/2003

9

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application N .

09/623,273

Applicant(s)

YAMANAKA ET AL.

Examiner

Ted Kim

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 24 March 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1,3-10,13-23 and 25-28 is/are pending in the application.
- 4a) Of the above claim(s) 13-18,21-23 and 28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-6,19,23,25 and 27 is/are rejected.
- 7) ☒ Claim(s) 7-10,20 and 26 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Claims 13-18, 21, 22, 28 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 8. It is noted that applicant has not listed all the claims that read on the elected species, in particular the generic claims. However, as the examiner already identified the generic claims in paper no. 2 of the election/restriction requirement, these have also been examined.

### ***Search Report***

2. The references cited by PCT in the search report have been considered but will not be printed on the face of any patent issuing therefrom without the submission of a separate PTO-1449 listing the references.

### ***Claim Objections***

3. Claims 3, 4, 6-10, 19, 20, 25, 26, 27 are objected to because of the following informalities:

- on line 9 of claim 3, “exchang” should be –exchanger,--.
- In claims 4, 6-10, 19, 20, 25, 26, 27, in the phrase “dust, etc.” the “etc” should be deleted.
- claim 26, line 6, “\_” should be deleted. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

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4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 4, 6, 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al (6,253,554) in view of either JP 60-171935 of the search report or Nishijima (5,185,997). Kobayashi et al teach a gas turbine comprising a first compressor 8, a gas turbine cooling system 7 to feed the gas from the compressor to the turbine 10 where components 31a, 31b are cooled, a second compressor 33 to boost the pressure of the gases from the heat exchanger. Kobayashi et al do not teach the use of a dust filter after the heat exchanger and before the second compressor. JP '935 teaches a first compressor 2 with filters 11, 18 used for filtering the dust prior to cooling the turbine 7. Nishijima teaches using a dust filter 5 after the heat exchanger 4 for filtering the dust prior to cooling the turbine 2. It would have been obvious to one of ordinary skill in the art to employ dust filters following the heat exchanger of Kobayashi et al, in order to remove the dust from the cooling air. Moreover, it is noted that it is deemed obvious to use the filter either before or after the second compressor, as it is noted that the cooling air holes of the turbine are very small (see e.g. holes 22 of JP '935) and that dust in the system clogs such cooling holes, hence dust removal is desired for its enhancement and protection for the cooling system.

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6. Claims 1, 5, 23, are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al (6,253,554) in view of Green (2,786,341). Kobayashi et al teach a gas turbine comprising a first compressor 8, a gas turbine cooling system 7 to feed the gas from the compressor to the turbine 10 where components 31a, 31b are cooled, a second compressor 33 to boost the pressure of the gases from the heat exchanger. Kobayashi et al do not teach a liquid separating device after the heat exchanger. Note that Kobayashi teach in Fig. 15 that the cooler 16 can be followed by additional cooling 37 prior to delivery into the turbine for cooling (col. 20, lines 16+). Green teaches a jet engine having a compressor 12 where bleed air 10 is cooled in a heat exchanger 14 for cooling the compressed air 10, 17, where after the heat exchanger the air has a water separator 28 (following water injection 35, and which serves to additionally cool the air, see col. 2, lines 34+) and the cooled air 29 is available for use in the aircraft. Green teaches that the cooled air in the broad invention can be used in any space where pressurized cooling air is needed (col. 1, lines 20-28). It is noted that gas turbine engines are used in jet engines and that it would have been obvious to one of ordinary skill in the art to use the water injector and separator following the cooler, as taught by Green, in order to further cool the air of Kobayashi prior to use in the turbine, i.e. the water injection would serve to further cool the air in a manner analogous to heat exchanger 37 in Fig. 15 of Kobayashi et al.

7. Claims 3, 19, 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al (6,253,554) in view of Green (2,786,341), as applied above and further in

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view of either JP 60-171935 of the search report or Nishijima (5,185,997). Kobayashi et al in view of Green teach using a water separator following the heat exchanger of Kobayashi et al. Kobayashi et al do not teach the use of a dust filter after the heat exchanger. JP '935 teaches a first compressor 2 with filters 11, 18 used for filtering the dust prior to cooling the turbine 7. Nishijima teaches using a dust filter 5 after the heat exchanger 4 for filtering the dust prior to cooling the turbine 2. It would have been obvious to one of ordinary skill in the art to employ dust filters following the heat exchanger of Kobayashi et al, in order to remove the dust from the cooling air. Moreover, it is noted that it is deemed obvious to use the filter either before or after the second compressor, as it is noted that the cooling air holes of the turbine are very small (see e.g. holes 22 of JP '935) and that dust in the system clogs such cooling holes, hence dust removal is desired for its enhancement for the cooling system.

*Allowable Subject Matter*

8. Claims 7-10, 20, 26 are objected to have allowable subject matter if rewritten to remove the objected to subject matter. Claim 8 further would require being rewritten in independent form.

*Prior Art*

9. Yamanaka et al show a heat exchanger 4, mist separator 5 and dust filter 6, and compressor 7 but its date is later than applicant's 371 filing date.

*Contact Information*

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Ted Kim whose telephone number is 703-308-2631. The Examiner can be reached on regular business hours before 5:00 pm, Monday to Thursday and every other Friday.

The fax numbers for the organization where this application is assigned are 703-872-9302 for Regular faxes and 703-872-9303 for After Final faxes.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Thorpe, can be reached on 703-308-0102.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist of Technology Center 3700, whose telephone number is 703-308-0861.

General inquiries can also be directed to Technology Center Customer Service Office at 703-306-5648 or the Patents Assistance Center whose telephone number is 800-786-9199. Furthermore, a variety of online resources are available at

<http://www.uspto.gov/main/patents.htm>



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